



# Toasting the real world

What makes Toaster work

Belén Barros Pena - ELC 2016

# This is Toaster

A web interface to [OpenEmbedded](#) and [BitBake](#), the [Yocto Project](#) build system.

To start building, create your first Toaster project

[Read the Toaster manual](#)

[Contribute to Toaster](#)

yocto PROJECT Toaster

Recent builds

core-image-sato (+3) qemu66	ETA: 16:34
core-image-sato atom-pc (15:22)	4 warnings Build time: 00:36:55
core-image-x11 qemu66 (12:01)	3 errors 10 warnings Build time: 00:27:45

All builds

Search builds Search Edit columns Show rows: 10

Outcome	Target	Machine	Completed on	Errors	Warnings	Output
	core-image-sato	atom-pc	11/06/13 at 15:22		4 warnings	ext3, hddimg, iso, tarbz2
	core-image-x11	qemu66	11/06/13 at 12:01	3 errors	10 warnings	
	core-image-sato	atom-pc	11/06/13 at 11:54		4 warnings	ext3, hddimg, iso
	busybox	qemu66-64	04/12/13 at 10:08			
	busybox	qemu66-64	04/12/13 at 09:58			
	www.intel.com:8000	www-66	11/06/13 at 17:16			ext3, hddimg

# interaction design





“Like industrial design, the discipline would start from the needs and desires of the people who use a product or service”

Bill Moggridge, *Designing Interactions* (2007)

building software that  
makes sense to the  
people who use it



# [yocto] how to deploy gdbserver ?

Valentin Le bescond [valentin.lebescond at gmail.com](mailto:valentin.lebescond@gmail.com)

Thu Oct 15 05:56:57 PDT 2015

- Previous message: [\[yocto\] Can i add two git sources in one single recipe](#)
- Next message: [\[yocto\] how to deploy gdbserver ?](#)
- Messages sorted by: [\[ date \]](#) [\[ thread \]](#) [\[ subject \]](#) [\[ author \]](#)

Hi everyone,

I want to be able to debug my target machine (raspberrypi) remotely through qtcreator on host.

I can't seem to find a way to deploy the gdbserver software though.  
I built the gdb-cross-arm but don't see any gdbserver on the target with hob (poky 1.7.2) ?

What am I missing ?

Thanks

--

Valentin LE BESCOND

----- next part -----

An HTML attachment was scrubbed...

URL: <http://lists.yoctoproject.org/pipermail/yocto/attachments/20151015/5d18e5d8/attachment-0001.html>>

- Previous message: [\[yocto\] Can i add two git sources in one single recipe](#)
- Next message: [\[yocto\] how to deploy gdbserver ?](#)
- Messages sorted by: [\[ date \]](#) [\[ thread \]](#) [\[ subject \]](#) [\[ author \]](#)

building a standard  
image for the  
Raspberry Pi takes ...

... 10 steps



10!!!

1. Find meta-raspberrypi
2. Clone meta-raspberrypi
3. Figure out if meta-raspberrypi requires any other layers
4. Clone the other layers
5. Add all the layers to bblayers.conf
6. Figure out the machine name for your Raspberry Pi
7. Set it as the MACHINE in local.conf
8. Source the build environment script
9. Find an image to build
10. Tell BitBake to build the image

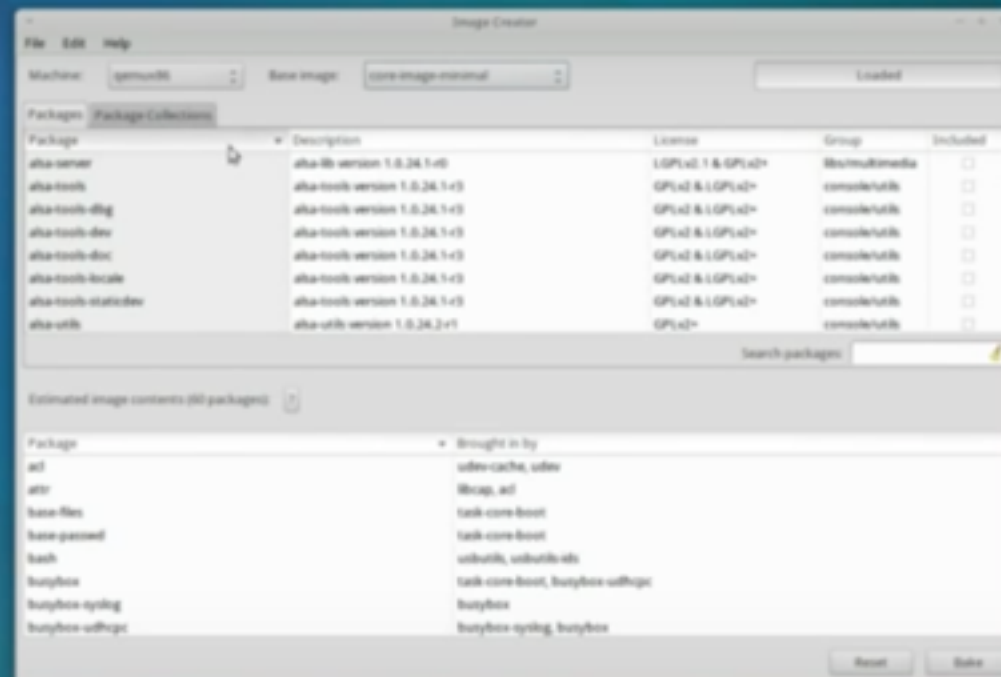




The aim of Hob is to enable a user to perform common tasks graphically, we focused primarily on enabling you to generate a custom image for the initial release but have several plans for enhancements over the coming months.

By way of introduction I spent some time producing a video to demonstrate use of the Hob (I'll avoid ranting about the state of Linux video editing tools), it's available to watch on [YouTube](#) and [Vimeo](#).

## Introducing Hob



2:42 / 6:11



YouTube



The challenge of the Hob was turning the traditionally batch-run BitBake program into something more interactive, unfortunately I underestimated how much effort this would involve such that what I was able to

This video shows how the simplest, somehow meaningful task you can carry out with OpenEmbedded looks like when you do it with Toaster.

<https://youtu.be/vyqpUgKctG8>



Yocto Project	OpenEmbedded	BitBake	poky
2.1 "Krogoth"	krogoth	1.30	15.0
2.0 "Jethro"	jethro	1.28	14.0
1.8 "Fido"	fido	1.26	13.0
1.7 "Dizzy"	dizzy	1.24	12.0

openembedded-core

meta-openembedded

meta-oe



# What are the differences between Open Embedded Core and meta-openembedded



2



Until now, I am still really confused between the recipes in Openembedded-core vs the one in meta-openembedded. And many time, have trouble to put the recipes in the right directory. They are really similar yet seem to be so different in the content of recipes.

[OpenEmbedded Core](#) contains base layer of recipes, classes and associated files that is meant to be common among many different OpenEmbedded-derived systems, including the Yocto Project.

[meta-openembedded](#) is a collection of layers for the OE-core universe


What are the differences of content of these two metadata? And why do they have to separate into two metadata?

[embedded-linux](#) [yocto](#) [openembedded](#)

share edit

add a comment

asked Mar 9 at 23:31

 [LightenS](#)

559 1 19

asked 22 days ago

viewed 57 times

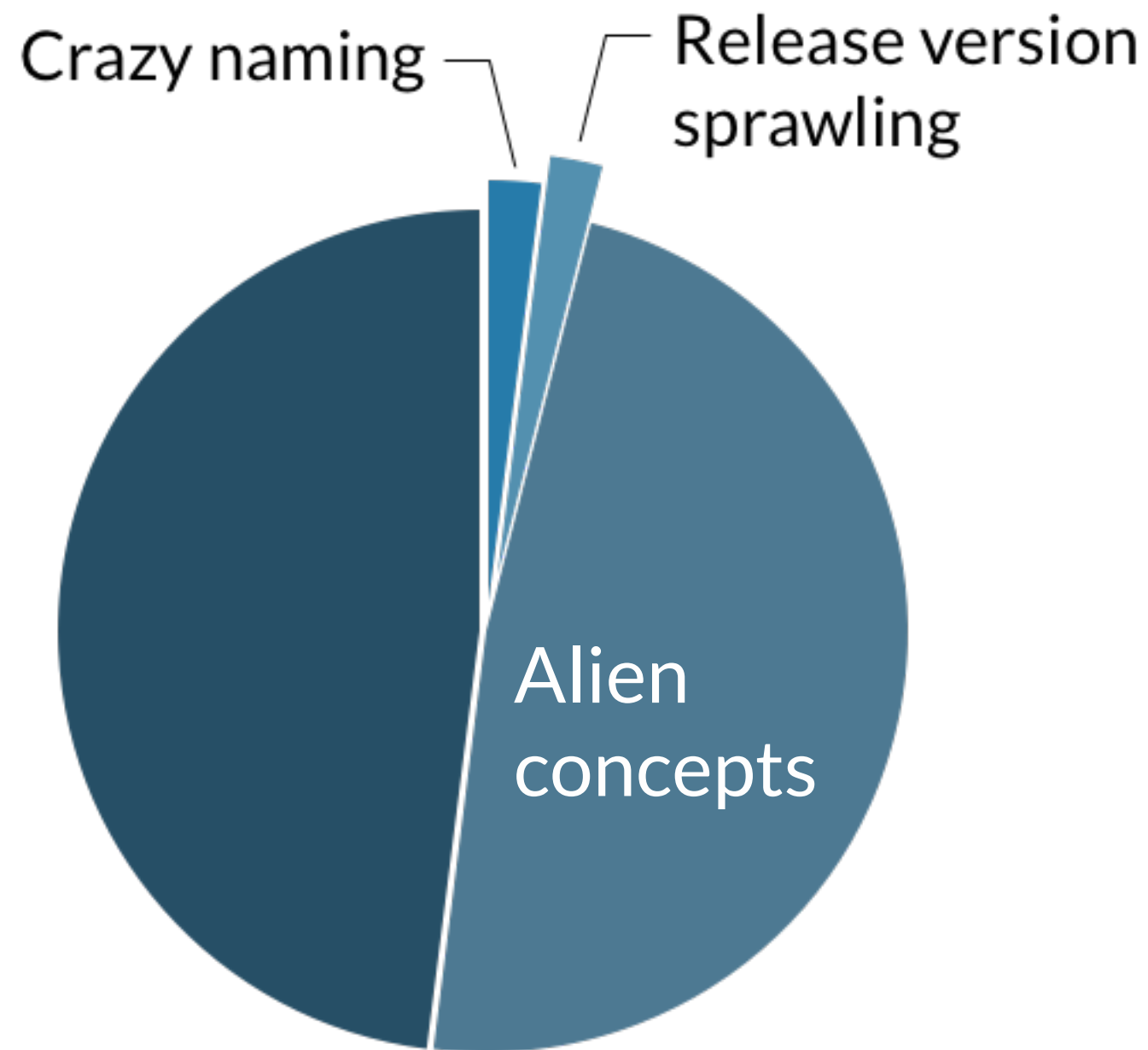
active 22 days ago

1 Answer

active oldest votes

FEATURED ON META

# OpenEmbedded madness pie chart





# What is Bitbake and Poky?

▲

1

▼

★

Can someone please briefly explain what is Bitbake, Poky, Recipes in simple words? I just want a basic understanding of what these are. Thanks.

yocto

bitbake

share

edit

add a comment

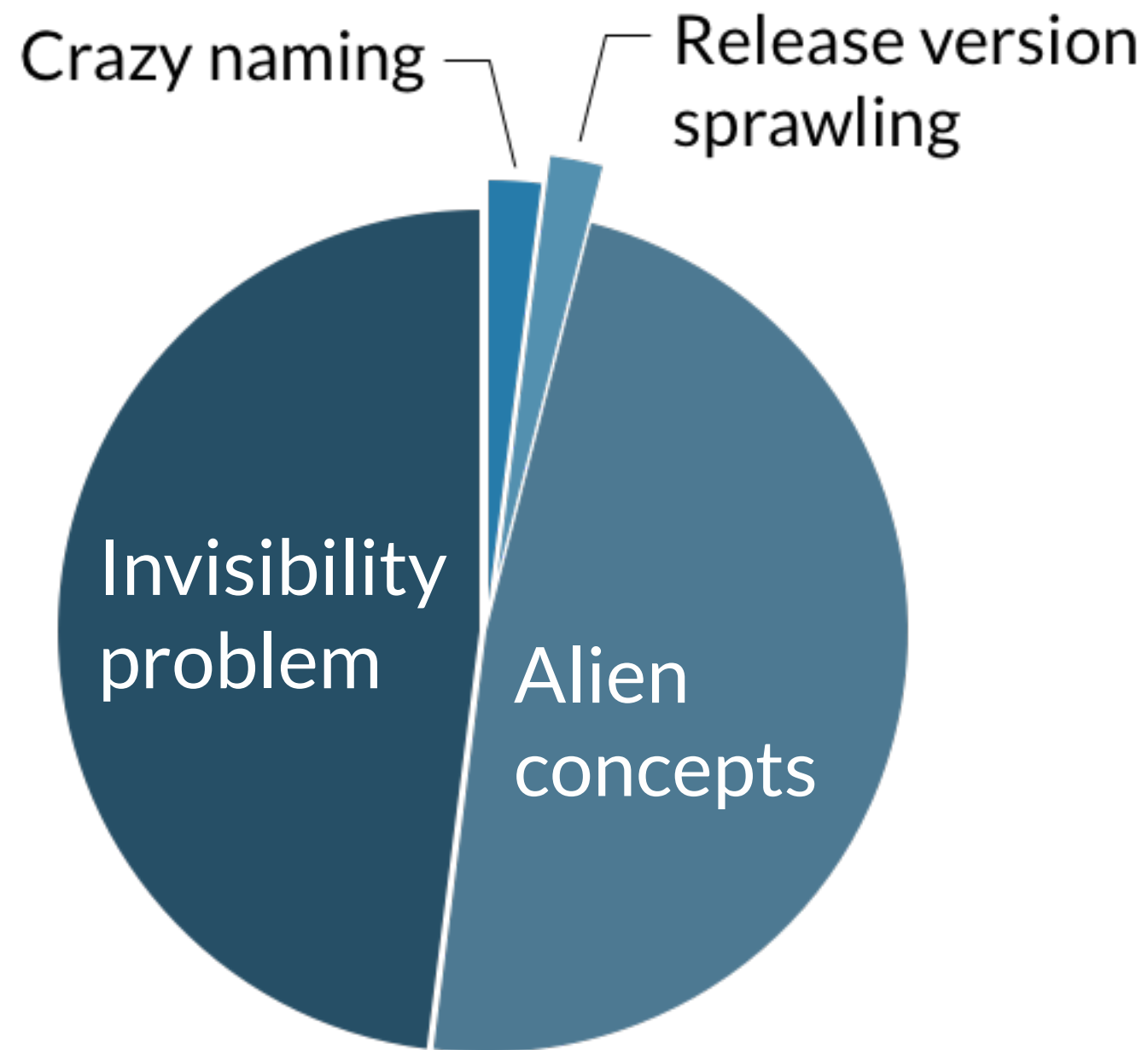
asked Mar 7 at 20:08

P Singh

6 ● 2



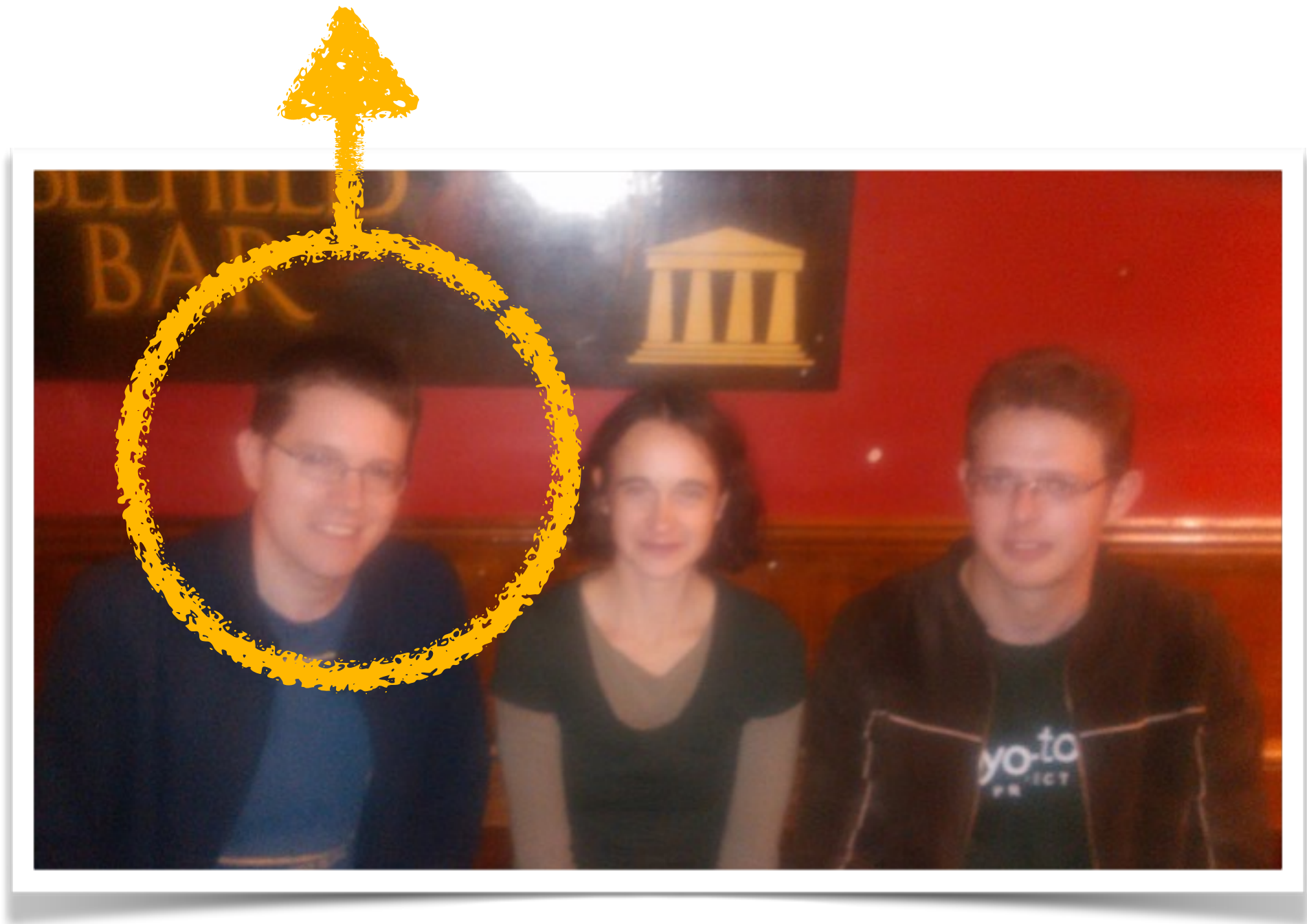
# OpenEmbedded madness pie chart



Mode	Name	Size			
-rw-r--r--	am180x-evm.conf	397	log	stats	plain
-rw-r--r--	am335x-evm.conf	1208	log	stats	plain
-rw-r--r--	am3517-evm.conf	1010	log	stats	plain
-rw-r--r--	am37x-evm.conf	916	log	stats	plain
-rw-r--r--	am437x-evm.conf	1132	log	stats	plain
-rw-r--r--	am437x- hs-evm.conf	178	log	stats	plain
-rw-r--r--	am57xx-evm.conf	1073	log	stats	plain
-rw-r--r--	beagleboard.conf	1165	log	stats	plain
-rw-r--r--	beaglebone.conf	344	log	stats	plain
-rw-r--r--	dra7xx-evm.conf	1073	log	stats	plain
-rw-r--r--	dra7xx- hs-evm.conf	178	log	stats	plain
d-----	<b>include</b>	345	log	stats	plain
-rw-r--r--	k2e-evm.conf	816	log	stats	plain
-rw-r--r--	k2g-evm.conf	19	log	stats	plain

easy-to-remember  
machine names (!)

# Paul Eggleton





OpenEmbedded Metadata Index - layers

OpenEmbedded Metadata I... x +

layers.openembedded.org/layerindex/branch/master/layers/

Search

Tools

Submit layer

belenbarrospena

Branch: master

Layers

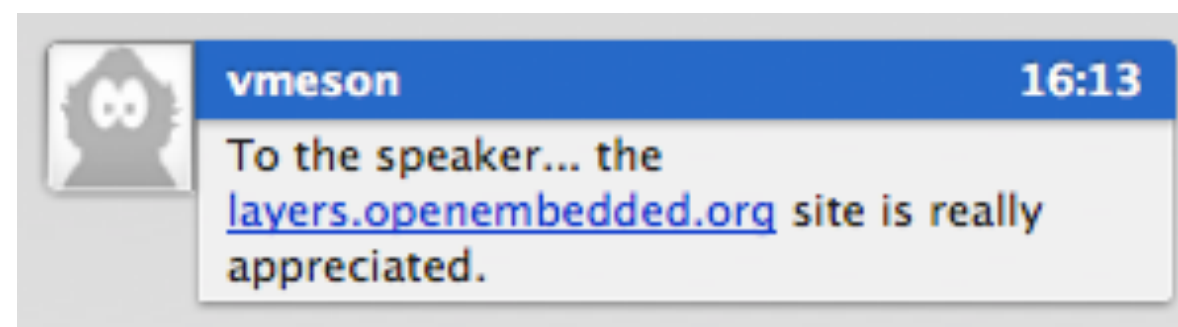
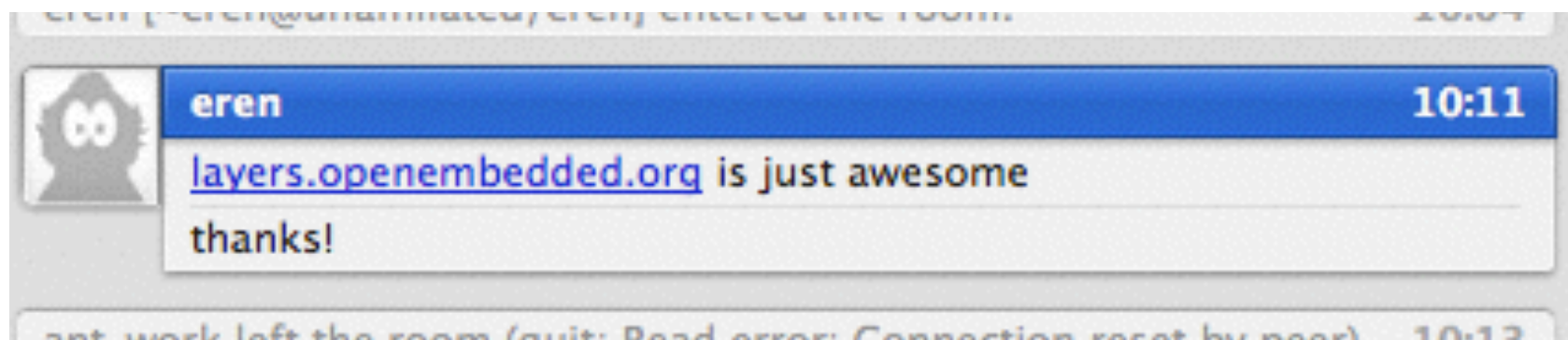
Recipes

Machines

Search layers

Filter layers

Layer name	Description	Type	Repository
<a href="#">meta-oe</a>	Additional shared OE metadata	Base	git://git.openembedded.org/meta-openembedded
<a href="#">openembedded-core</a>	Core metadata	Base	git://git.openembedded.org/openembedded-core
<a href="#">e100-bsp</a>	Ettus E1XX series BSP	Machine (BSP)	git://github.com/EttusResearch/meta-ettus.git
<a href="#">e300-bsp</a>	Ettus E3XX Series BSP	Machine (BSP)	https://github.com/EttusResearch/meta-ettus.git
<a href="#">meta-aarch64</a>	AArch64 (64-bit ARM) architecture support	Machine (BSP)	git://git.linaro.org/openembedded/meta-linaro.git
<a href="#">meta-acer</a>	Acer machines support	Machine (BSP)	git://github.com/shr-distribution/meta-smartphone.git
<a href="#">meta-altera</a>	Altera SoC BSP layer	Machine (BSP)	https://github.com/kraj/meta-altera
<a href="#">meta-amd</a>	AMD board support common layer (official)	Machine (BSP)	git://git.yoctoproject.org/meta-amd
<a href="#">meta-asus</a>	Asus machines support	Machine (BSP)	git://github.com/shr-distribution/meta-smartphone.git





# [poky] [linux-yocto] Plymouth support in yocto

Burton, Ross [ross.burton@intel.com](mailto:ross.burton@intel.com)

Thu Jan 28 13:43:34 PST 2016

- Previous message: [\[poky\] \[PATCH\]\[V2\] conf/distro/poky.conf: use iana.org for connectivity check](#)
- Next message: [\[poky\] \[PATCH\] conf/distro/poky.conf: use example.com for connectivity check](#)
- Messages sorted by: [\[ date \]](#) [\[ thread \]](#) [\[ subject \]](#) [\[ author \]](#)

---

On 28 January 2016 at 18:01, Bryan <[just4tech83@gmail.com](mailto:just4tech83@gmail.com)> wrote:

> Can we integrate plymouth package in yocto so that we can properly  
> display splash screen on different resolution monitors.

>

>

<http://layers.openembedded.org/layerindex/recipe/39966/>



Ross

----- next part -----

An HTML attachment was scrubbed...

URL: <<http://lists.yoctoproject.org/pipermail/poky/attachments/20160128/545d5e39/attachment.html>>

---

213 layers

307 machines

8255 recipes

217 images














































## Build

### BitBake variables

## 25

Machine ▾	Description	Layer	 Select 
10m50	nios2 machines	meta-altera	 Add layer 
a500	Acer IconiaTab A500	meta-acer	 Add layer 
akita	Sharp Zaurus SL-C1000 device	meta-handheld	 Add layer 
am180x-evm	TI AM180x EVM board	meta-ti	 Add layer 
am335x-evm	TI AM335x EVM	meta-ti	 Add layer 
apalis-imx6	Toradex Apalis iMX6 SOM	meta-fsl-arm-extra	 Add layer 
arago	Unified/fake Arago machine configuration for TI/Arago ARMv5 platforms	meta-arago-distro	 Add layer 
arago-armv5	Unified/fake Arago machine configuration for TI/Arago ARMv5 platforms	meta-arago-distro	 Add layer 
arago-armv7	Unified/fake Arago machine configuration for TI/Arago ARMv7 platforms	meta-arago-distro	 Add layer 

 Software recipe ▾	Version	 Layer	 License	 Build 
angstrom-zeroconf-audio	1.0	meta-angstrom	MIT	 Add layer 
ant-native	1.8.1	meta-java	Apache-2.0	 Add layer 
anthy	9100h	meta-oe	LGPLv2.1	Build recipe
antimony	0.8.0b	meta-qt5-extra	MIT	 Add layer 
antlr	2.7.7	meta-java	PD	 Add layer 
ap6210-firmware-nanopi	1.0	meta-nanopi	Proprietary	 Add layer 
apache-logformat-compiler-perl	0.33	meta-cpan	Artisticv1   GPLv1+	 Add layer 
apache2	2.4.16	meta-webserver	Apache-2.0	 Add layer 
apache2		meta-debian		 Add layer 





Compatible layers - Pi builds - Toaster

Compatible layers - Pi builds - T... x

Compatible layers - Pi builds - T...

Search

yocto PROJECT

Toaster

All builds

All projects

New project

Manual

# Pi builds

Configuration

Builds (1)

Import layer

New custom image

Type the recipe you want to build

Build

Configuration

COMPATIBLE METADATA

Custom images

Image recipes

Software recipes

Machines

Layers

EXTRA CONFIGURATION

BitBake variables

## Compatible layers (213)

Search compatible layers

Search

Edit columns

Show rows: 25

Layer	Summary	Git revision	Dependencies	Add   Remove
e100-bsp	Ettus E1XX series BSP	master	2	+ Add layer
e300-bsp	Ettus E3XX Series BSP	master	1	+ Add layer
meta-aarch64	AArch64 (64-bit ARM) architecture support	master	1	+ Add layer
meta-acer	Acer machines support	master	3	+ Add layer
meta-ada	Ada support	master	1	+ Add layer
meta-alt-desktop-extras	Lightweight (legacy) X desktop, tools, and recipe extensions	master	2	+ Add layer
meta-altera	Altera SoC BSP layer	master	1	+ Add layer
meta-amd	AMD board support common layer (official)	master	1	+ Add layer
meta-android	Android specific tools	master	1	+ Add layer

This video shows a couple of OpenEmbedded layers missing from the Layer Index, and how they don't appear in Toaster either.

<https://youtu.be/paPzZOnD8fI>

# If you maintain an open source layer ...

1. Submit it to the Layer Index

Branch: master ▾

Layers

Recipes

Machines

master

jethro (Yocto Project 2.0)

fido (Yocto Project 1.8)

dizzy (Yocto Project 1.7)

daisy (Yocto Project 1.6)

dora (Yocto Project 1.5)

dylan (Yocto Project 1.4)

danny (Yocto Project 1.3)

OE-Classic

Filter layers ▾

Layer	Description	Type	Repository
meta-openembedded	Additional shared OE metadata	Base	git://git.openembedded.org/meta-openembedded
meta-core	Core metadata	Base	git://git.openembedded.org/openembedded-core
e1000-bsp	Ettus E1XX series BSP	Machine (BSP)	git://github.com/EttusResearch/meta-ettus.git
e300-bsp	Ettus E3XX Series BSP	Machine (BSP)	https://github.com/EttusResearch/meta-ettus.git
meta-aarch64	AArch64 (64-bit ARM) architecture support	Machine (BSP)	git://git.linaro.org/openembedded/meta-linaro.git
meta-acer	Acer machines support	Machine (BSP)	git://github.com/shr-distribution/meta-smartphone.git
meta-altera	Altera SoC BSP layer	Machine (BSP)	https://github.com/kraj/meta-altera
meta-amd	AMD board support common layer (official)	Machine (BSP)	git://git.yoctoproject.org/meta-amd
meta-asus	Asus machines support	Machine (BSP)	git://github.com/shr-distribution/meta-smartphone.git

OpenEmbedded	Yocto Project	Layers
master	master	213
jethro	2.0	73
fido	1.8	91



This video shows an example of a layer that doesn't exist for all OpenEmbedded stable branches.

<https://youtu.be/xCPLsRmJmDo>

do not mix layers from  
different branches

I have no idea where to go from here. I suspect the issue might be that the files I get from openembedded don't match the files yocto project. But I don't know what to do about that.

Any help on how to add python-twisted to core-image-sato would be greatly appreciated.

linux

twisted

yocto

bitbake

openembedded

share edit

add a comment

asked Mar 16 at 0:45



Dave

110

1

1

6

## 2 Answers

active

oldest

votes

Well, rule number one when using OpenEmbedded-based build systems, make sure that all your layers use the correct branch!

Look at the `README` in each additional layer that you want to use. That `README` should specify what other layers are required, and which branches from those required layers.

`bash-completion.bbclass` was recently added to OE-Core (end of January, 2016). Thus, it's only part of the master branch, no releases incorporate that class.

The `networkmanager_1.0.10.bb` is only available in the master branch of `meta-openembedded`. I

This video shows how you set the BitBake version and the metadata branch in Toaster, and how Toaster enforces the "do not mix layers from different branches" rule.

<https://youtu.be/h35PI-UgkSc>

# If you maintain an open source layer ...

1. Submit it to the Layer Index
2. Create branches for all  
OpenEmbedded stable branches



This video shows how to import layers with Toaster, and how you can use the import layer feature to bypass the "do not mix layers from different branches" rule.

<https://youtu.be/vI14GXiI4oc>

This video shows that Toaster will not have any information about imported layers until you build them.

<https://youtu.be/Xu0GvAA2wtQ>

This video shows how Toaster knows about layer dependencies.

<https://youtu.be/eWoZ3BTf84U>

This video shows how you enter layer dependencies in the Layer Index.

<https://youtu.be/q-Z05Sqz0LY>



# [yocto] Adding lxc support to image

**Biyani Arun (CM/ESC-NA)** [Arun.Biyani at us.bosch.com](mailto:Arun.Biyani@us.bosch.com)

*Mon Mar 7 05:52:53 PST 2016*

- Previous message: [\[yocto\] \[meta-qt3\]\[PATCH\] classes: add qmake base.bbclass](#)
- Next message: [\[yocto\] Adding lxc support to image](#)
- **Messages sorted by:** [\[ date \]](#) [\[ thread \]](#) [\[ subject \]](#) [\[ author \]](#)

---

I would like to include lxc style container support in poky image. I added "meta-virtualization" to my bblayers.conf. I now get errors when running "bitbake-layers show-recipes".

```
Parsing recipes..ERROR: No recipes available for:
/home/fcadev/GR_Yocto/meta-virtualization/recipes-kernel/linux/linux-yocto_4.4.bbappend
/home/fcadev/GR_Yocto/meta-virtualization/recipes-kernel/linux/linux-yocto_4.1.bbappend
```

I placed the bbappend files in the appropriate directory but I still get this message. Please help.

What are the changes needed to include lxc support in the image?

This video shows what happens in Toaster when you try to build a layer that has incomplete dependencies.

<https://youtu.be/EiVmPBKHNpg>

# If you maintain an open source layer ...

1. Submit it to the Layer Index
2. Create branches for all  
OpenEmbedded stable branches
3. Make sure the layer dependencies  
are correct

how hard or how easy  
it is to build with  
OpenEmbedded  
is up to you



# [yocto] how to deploy gdbserver ?

Valentin Le bescond [valentin.lebescond at gmail.com](mailto:valentin.lebescond@gmail.com)

Thu Oct 15 05:56:57 PDT 2015

- Previous message: [\[yocto\] Can i add two git sources in one single recipe](#)
- Next message: [\[yocto\] how to deploy gdbserver ?](#)
- Messages sorted by: [\[ date \]](#) [\[ thread \]](#) [\[ subject \]](#) [\[ author \]](#)

Hi everyone,

I want to be able to debug my target machine (raspberrypi) remotely through qtcreator on host.

I can't seem to find a way to deploy the gdbserver software though.  
I built the gdb-cross-arm but don't see any gdbserver on the target with hob (poky 1.7.2) ?

What am I missing ?

Thanks

--

Valentin LE BESCOND

----- next part -----

An HTML attachment was scrubbed...

URL: <http://lists.yoctoproject.org/pipermail/yocto/attachments/20151015/5d18e5d8/attachment-0001.html>>

- Previous message: [\[yocto\] Can i add two git sources in one single recipe](#)
- Next message: [\[yocto\] how to deploy gdbserver ?](#)
- Messages sorted by: [\[ date \]](#) [\[ thread \]](#) [\[ subject \]](#) [\[ author \]](#)

1. Figure out which recipe builds the gdb package
2. Find out about the IMAGE\_INSTALL variable
3. Learn about the correct appending syntax
4. Know that the correct place to append to IMAGE\_INSTALL is the local.conf file
5. Build his image





This video shows how you add a package to an image in Toaster 2.0 by appending to IMAGE\_INSTALL.

<https://youtu.be/0OVP51W2ab4>

This video shows how you add a package to an image in Toaster 2.1 and how you can download the image recipe file.

<https://youtu.be/2ImHPDlvocM>



## Image configuration



Images



Settings

## Select a machine

Your selection is the profile of the target machine for which you are building the image.



### Layers

Add support for hardware, software, etc.



## Select an image recipe

Image recipes are a starting point for the image. You can build the image as is, or they are or edit them to suit your needs.

### Advanced configuration

Advanced image types, package formats, etc

A console-only image with minimal features and Linux system functionality.

[Edit image recipe](#)[Build image](#)

# Where next?

## 1. Enhance the build information

This video shows the build  
information feature in Toaster.

<https://youtu.be/ZwporQ2dO5w>

# Where next?

1. Enhance the build information
2. Improve Toaster team work capabilities
3. Stop developing Toaster

belen.barros.pena@intel.com

belen on #yocto & #oe

@belenpena



A decorative pattern of overlapping hexagons in various shades of gray, located in the upper-left corner of the slide.

thank you

and Paul Eggleton, Michael Wood, Brian  
Avery, the OpenBMC folks and all  
Toaster contributors



# Credits

Slide 4: Bill Mogridge Presentation by Garret Keogh under CC BY-NC-SA 2.0

Slide 11 and 49: Flour by Malakhi Helel under CC BY-ND 2.0

Slide 25: Superman! by Evonne under CC BY 2.0